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Research Note

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

INTERMOUNTAIN FOREST & RANGE EXPERIMENT STATION
OGDEN UTAH

No. 88

March 1962

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APPALACHIAN SCALE SHELTER

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Division of Forest Fire Research

INTRODUCTION

The Appalachian scale was developed more than 20 years ago in the eastern United States. It has been used extensively there for determining fuel moisture in conjunction with fire danger rating. Other regions have adopted this scale or modified versions for similar use. In recent years the Appalachian-type scale has been accepted and used as a standard for fuel moisture measurements in the Intermountain West. Each year more stations in Regions 1 and 4 are replacing wornout and nonfunctioning scales of other types with the Appalachian scale.

In Regions 1 and 4 more than 250 stations are taking fuel moisture measurements during the fire season each year. Progress toward establishment of the Unified Fire Danger Rating System requires that standards and uniformity of fire weather measurements be improved and maintained. The fuel sticks are now manufactured to rigid specifications, and definite guidelines for placement and maintenance of fire weather stations and equipment have been set up. It is logical, therefore, that a standard and acceptable shelter be used for this type of scale.

The Appalachian scale is a simple yet accurate instrument when correctly installed and operated. Many fire weather stations have modified their old shelters to accommodate the Appalachian scale. The critical factor in correct installation is that the scale must be level and plumb. If the scale is not absolutely level, it will give inaccurate readings.

Many of the modified shelters do not provide means by which to level the scale, and those that do can level in one plane only. Other inadequacies in these adapted shelters include insufficient viewing space when the door is closed and insufficient space for fuel sticks to hang freely while being weighed.

OBJECTIVES

1. Standardize equipment
2. Overcome inadequacies of present scale shelters
3. Obtain consistent and reliable data
4. Provide a low-cost scale shelter
5. Design a shelter having maximum ease of assembly and simplicity of construction

The general objective of the development of a new shelter to be used with the Appalachian scale is to standardize and improve equipment used throughout the Intermountain area. Overcoming the inadequacies found in present shelters will promote consistent and accurate measurements. While achieving this important objective, we intended to provide a unit that could be assembled easily at a reasonably low cost.

To meet these objectives, a precut unit seemed to be most practical. Not all stations where shelters are needed have power tools available, nor do they always have personnel who can read blueprints or do adequate woodworking.

SCALE SHELTER CONSTRUCTION

The new shelter described below has been designed to avoid past inadequacies and construction problems but especially to improve measurements. It provides leveling in two planes, adequate room inside, and ample viewing through the large window in the door.

In the design, standard materials available from any lumber dealer have been used for construction. The door, roof, back, and scale-mounting assembly are made from 3/4-inch AD exterior plywood. The remaining wooden parts are constructed from No. 2 pine. All hardware is standard; no specialty items have been used. Construction is simple, utilizing straight cuts throughout.

The entire shelter, including hardware and detailed assembly instructions, is prepared in a precut kit form so that the only tools necessary for construction are a hammer, drill, screwdriver, and putty knife. Assembly is quite easy and has been set up as a step-by-step procedure; no skilled labor is needed.

Figure 1 shows the complete scale shelter package ready for shipment. The finished shelter is shown in figures 2 and 3. Details of construction, leveling procedures, and installation directions are shown in the drawings that follow.

Preparing the shelter in kit form has kept the cost low--much lower than if each shelter were built individually. Cost for the complete kit is approximately $10, and the total assembly time should not run longer than 2 hours. The most important benefits, however, are uniformity and improved standards, which result in better accuracy.

JAMES C. SPACE

Both the Appalachian Scale Shelter kit and the scale to be used with it can be obtained from the Forest Service Warehouse, Missoula, Montana.

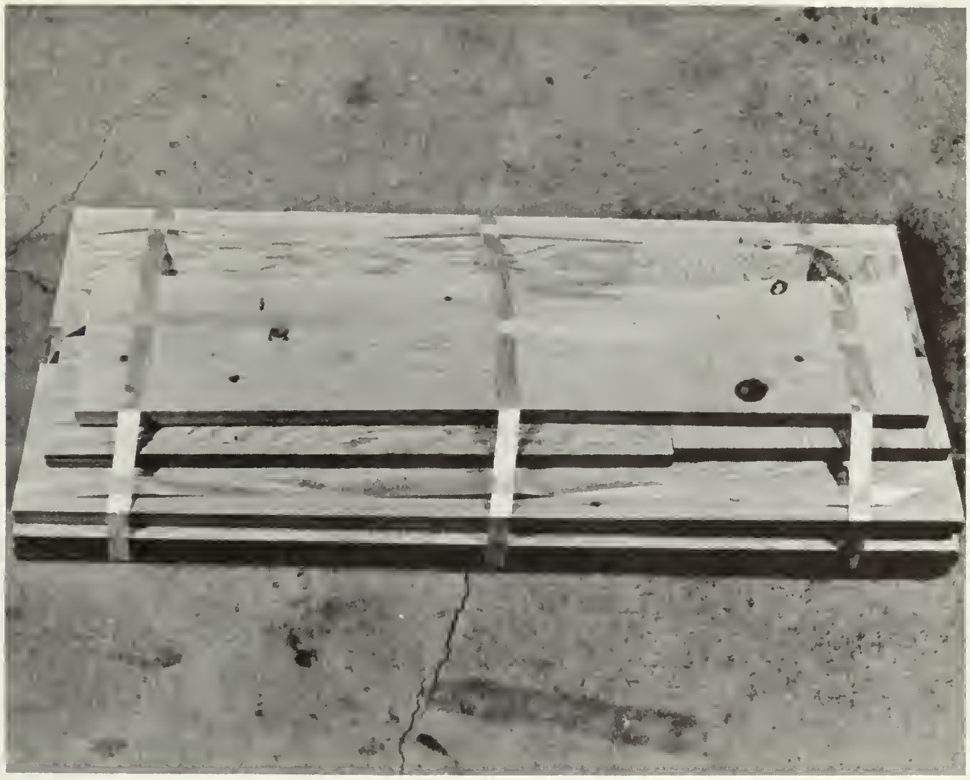


Figure 1. Complete package of Scale Shelter kit.

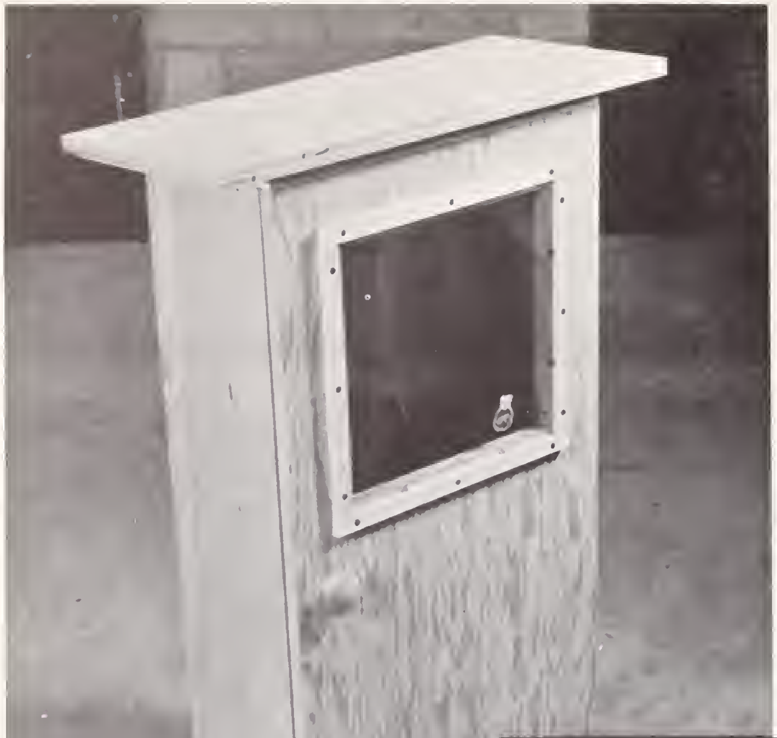


Figure 2. Completed Scale Shelter.

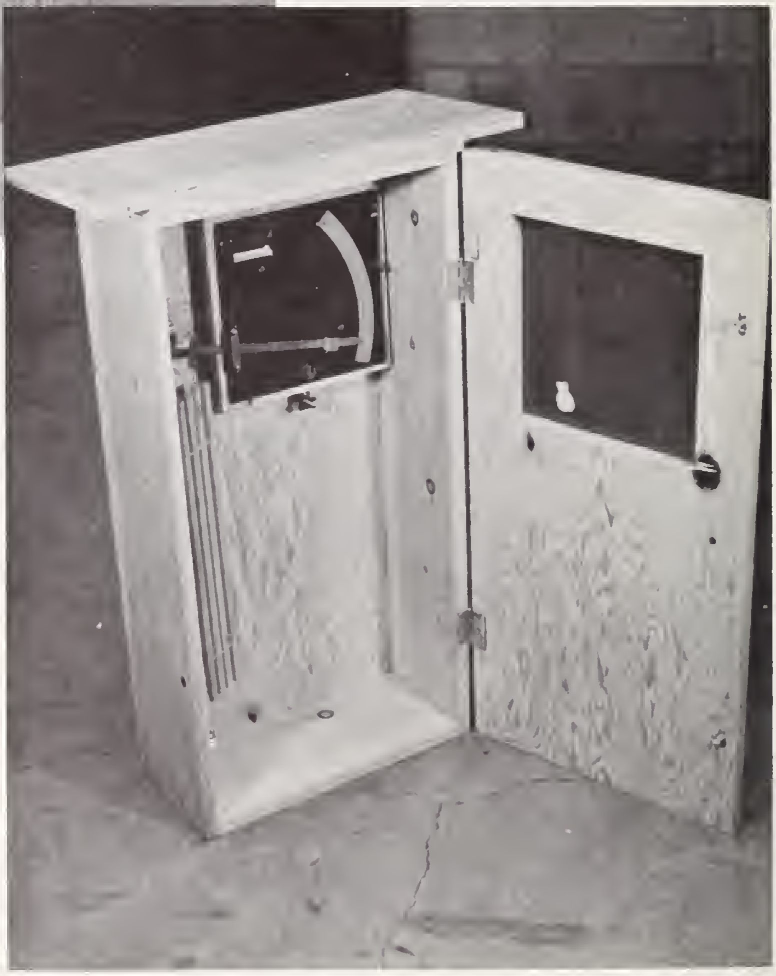
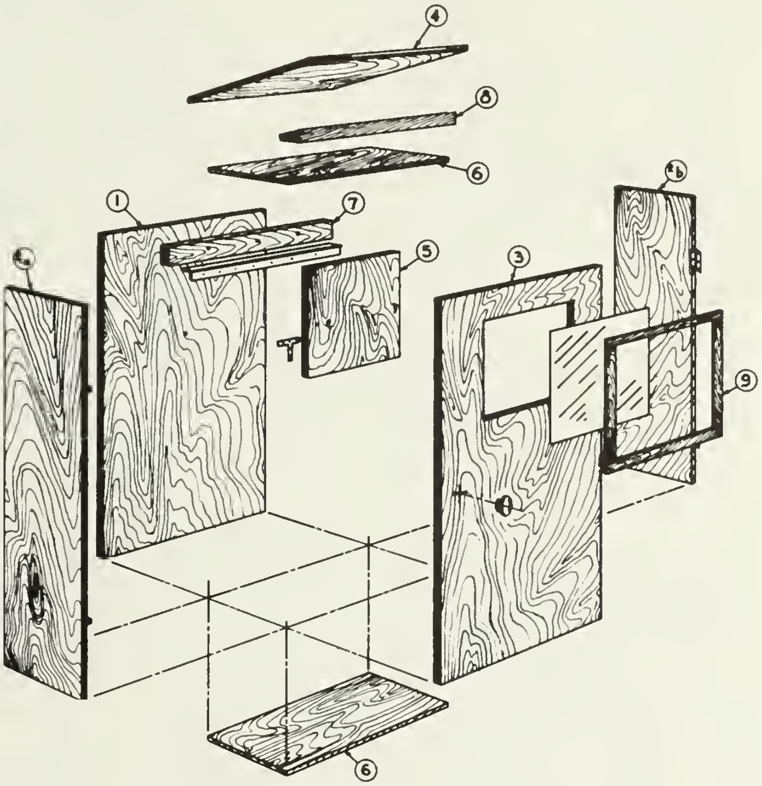


Figure 3. Completed Shelter with scale installed.

Figure 4. Detailed drawings of Appalachian Scale Shelter.



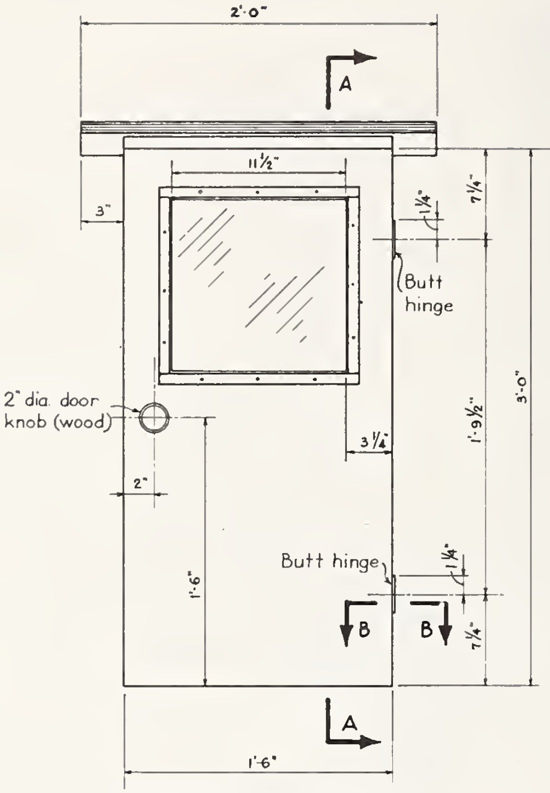
PERSPECTIVE VIEW
(EXPLODED)

APPALACHIAN SCALE SHELTER

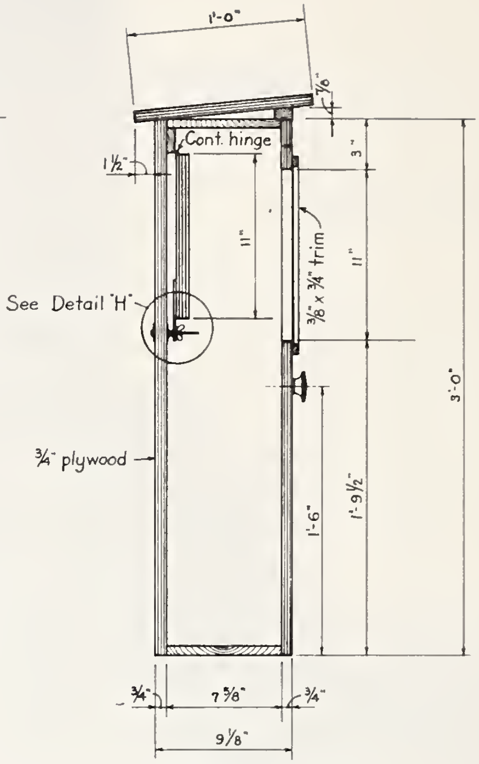
LEGEND

① Back panel
(2a)(2b) Side panels
③ Door
④ Roof
⑤ Scale mounting board
⑥ Top and bottom panels
⑦ Scale mounting strip
⑧ Beveled roof strip
⑨ Window moulding

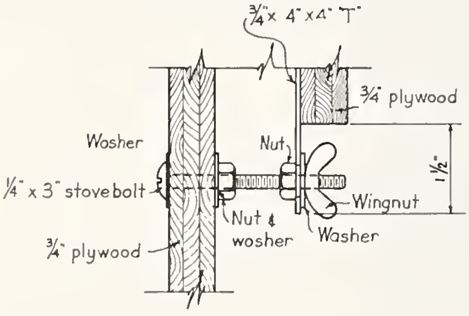
Sheet 1 of 3



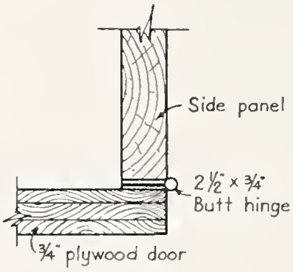
FRONT ELEVATION



SECTION A-A



DETAIL "H"



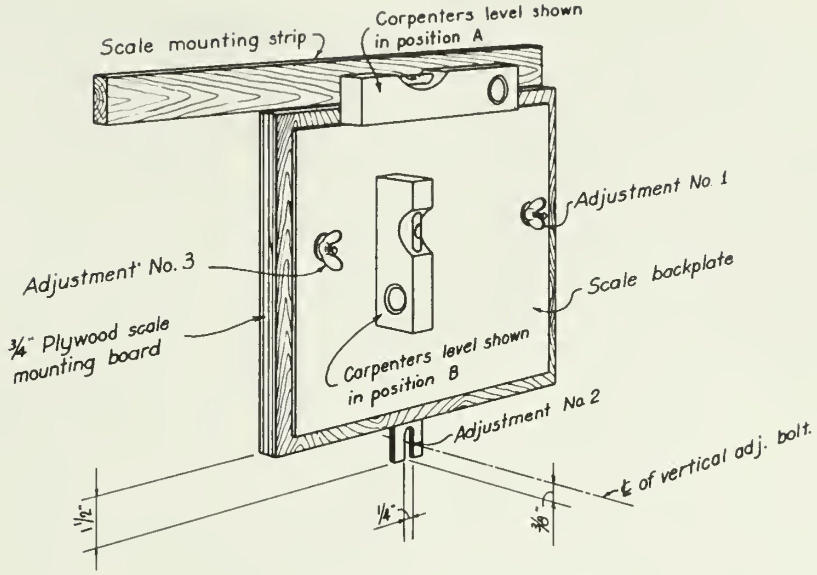
SECTION B-B

APPALACHIAN SCALE SHELTER

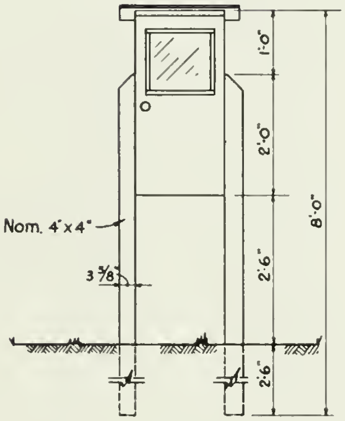
PLANS SECTIONS AND DETAILS

DESIGNED R. J. BARNEY DATE 1-2-62
DRAWN D. R. ANDERSON DATE 1-15-62
APPROVED A.P. BRACKBUSH DATE 1-22-62

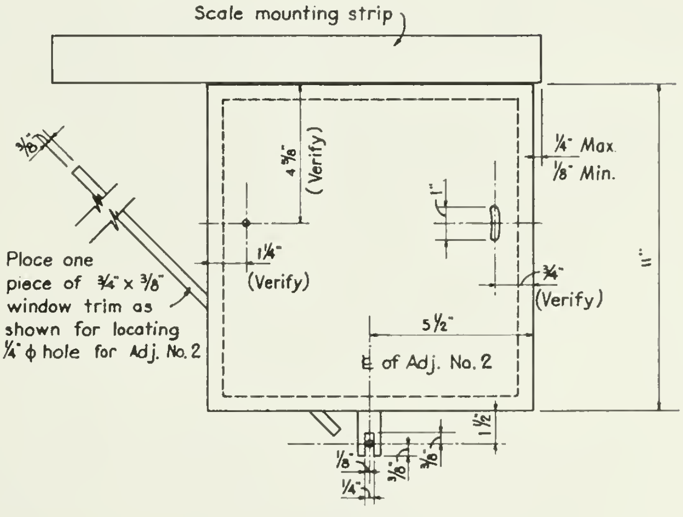
Sheet 2 of 3



PERSPECTIVE VIEW
SCALE LEVELING DETAIL



SHELTER MOUNTING DETAIL



MOUNTING BOARD DETAIL

Sheet 3 of 3